



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,695	05/21/2002	Yukoh Hiei	0760-0350 P	5501
2292	7590	01/31/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			HELMER, GEORGIA L	
			ART UNIT	PAPER NUMBER
			1638	
DATE MAILED: 01/31/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/089,695

**Applicant(s)**

HIEI ET AL.

**Examiner**

Georgia L. Helmer

**Art Unit**

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date June 02, August 04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Status of the Claims.***

1. The Office acknowledges the receipt of Applicant's preliminary amendment, 3 April 2002. Claims 1-25 are pending.

### ***Information Disclosure Statement***

2. Receipt of Applicant's IDS dated 18 June 2002 and 12 August 2004 is acknowledged and signed copies are returned herewith.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-9, and 13 -16 are rejected under 102(b) as being anticipated by Forreiter, et. al. (Stable transformation of an Arabidopsis thaliana cell suspension culture with firefly luciferase providing a cellular system for analysis of chaperone activity in vivo, Plant Cell, vol. 9, pages 2171-2181, 1997).

The instant claims are drawn to methods for promoting efficiency of gene transfer to plant cells by Agrobacterium comprising heating and centrifuging the plant cells or tissue, wherein the gene transfer is carried out after heating and

Art Unit: 1638

centrifuging, wherein the heat treatment is from 33-60 °C, for 5 seconds to 24 hours, and wherein the centrifuging is from 100G to 250,000G.

Forreiter et. al. teach a method of gene transfer to *Arabidopsis thaliana* cells by *Agrobacterium* comprising heating and centrifuging the *Arabidopsis thaliana* cells, wherein heating is at 41° for a time period of 0 to 20 minutes (p. 2179, 3rd full ¶) (claims 3-7) and centrifuging is at 600G for one minute (p. 2178 6<sup>th</sup> full ¶) (claims 8, 9, and 11).

The phrase "gene transfer into plant cells by *Agrobacterium* comprising heating and centrifuging said plant cells or tissue" is interpreted to encompass any sequence of the named steps since no positive step of *Agrobacterium* gene transfer" is set forth.

*Arabidopsis thaliana* is an Angiosperm plant. Antiosperms are flowering plants.

Accordingly, Forreiter et. al. anticipate the claimed invention.

5. Claims 1-7, 12, 14-15, 17-18, 20-21, 23 and 24 are rejected under 102(b) as being anticipated by Hansen (WO 98/54961, published 10 December 1998).

The instant claims are drawn to methods for promoting efficiency of gene transfer to rice or maize cells by *Agrobacterium* comprising heating and centrifuging the plant cells or tissue, wherein the gene transfer is carried out after heating and centrifuging, wherein the the heating is at 33-60 °C, for 5 seconds to 24 hours.

Hansen teaches a method of gene transfer to maize by *Agrobacterium* comprising heating and centrifuging the maize cells, wherein heating is at 45° for

Art Unit: 1638

a time period of 4 minutes and wherein gene transfer occurs after heat shock and centrifugation (p. 18, 4<sup>th</sup> & 5<sup>th</sup> lines from the bottom, p. 19 lines 1 & 2) (claims 2-7). Since the Agrobacterium are not mixed with the plant cells until after the heat shock, and Agrobacterium is the means for the gene transfer, the gene transfer could not possibly occur before the heat shock.

Hansen teach cells being "collected" from culture. The standard laboratory procedure for collecting cells is by centrifugation, as evidenced by Cooper (The Tools of Biochemistry, T. G. Cooper, John Wiley, New York, 1977, pages 309, 1<sup>st</sup> full ¶ and p. 311 1<sup>st</sup> full ¶). Maize is a Gramineaceous monocot Angiosperm plant.

The phrase "gene transfer into plant cells by Agrobacterium comprising heating and centrifuging said plant cells or tissue" is interpreted to encompass any sequence of the named steps since no positive step of Agrobacterium gene transfer" is set forth.

Accordingly, Hansen anticipates the claimed invention.

6. Claims 16, 19, 22 and 25 are rejected under 102(b) as being anticipated by Hiei, et al (US 5,591,616 issued 7 January 1997).

Claims 16, 19, 22 and 25 are drawn to Angiosperm plant cells, monocot cells or tissue, gramineaceous plant tissue or plants and cells, and rice or maize cells, tissue or plants produced by the method of claim 1 or 2. These claims are product-by-process claims, and are thereby rejected over Hiei, et al., who teach Agrobacterium mediated transgenic rice plants and cells (column 17, Table 8).

Art Unit: 1638

The "transformants" set forth in Table 8, line 1, are transgenic rice plants. Rice and maize are graminaceous monocot Angiosperm plants.

See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

Accordingly, Hiei et. al. anticipate the claimed invention.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 1, 3-10, and 13 -16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Forreiter, et. al., as discussed above for claims 1, 3-9, and 13 -16.

The instant claims are drawn to methods for promoting efficiency of gene transfer to plant cells by *Agrobacterium* comprising heating and centrifuging the plant cells or tissue, wherein the centrifuging is from 1000G to 150,000G.

Forreiter et. al. teach a method of gene transfer to *Arabidopsis thaliana* cells by *Agrobacterium* comprising heating and centrifuging, wherein centrifuging is in the range of 500G to 200,000G.

Forreiter et. al. do not teach centrifuging at 1000G to 150,000G.

Art Unit: 1638

The use of centrifugation at 1000G to 150,000G is an obvious variant of the given centrifugation rates, and reflects a design choice, which was well within the knowledge and skill of one of ordinary skill in the art and could be used with reasonable expectation of success. Thus the claimed invention would have been prima facie obvious as a whole to one of ordinary skill in the art at the time it was made.

Accordingly, the claimed invention is prima facie obvious in view of the prior art.

**REMARKS**

9. No claims are allowed.
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Georgia L. Helmer whose telephone number is 571-272-0796. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 571-272-0804. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Georgia Helmer PhD  
Patent Examiner  
Transgenic Plants, art unit 1638  
January 9, 2005

AMY J. NELSON, PH.D  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1600